

monly are exceptionally vigorous. An interesting instance of return to an ancestral character of higher grade is described and illustrated by Dr. E. C. Jeffrey in his account of the resin ducts of *Sequoia*. The primitive structure reappeared where the food supply had been increased and growth had been stimulated as the result of a wound.

The foregoing facts are representative of a considerable body of data¹ which might be brought forward in support of certain general statements to which I may give the following form: (1) Reversions, in either an ascending or a descending direction, are sometimes occasioned in plants by a deficiency of the food materials supplied to developing parts; and (2) Reversions, in either direction, are sometimes occasioned by a superabundant food-supply in developing parts.

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ASPLENIUM EBENEUM PROLIFERUM.

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THE most familiar instance of a fern with proliferous fronds is the walking-fern (*Camptosorus*). The greatly prolonged tip of the frond is pushed into the moss on the surface of the rock, and a young plant is developed. At first the tip thickens, then rootlets start out, and finally the small fronds appear. A tropical species (*Polystichum Plaschnickianum*) has almost the same outline of frond, and the same method of reproduction as the walking-fern. Scott's spleenwort (*Asplenium ebenoides*), which has now been definitely shown to be a cross between *Aspl. ebeneum* and *Camptosorus*, is occasionally seen with young plants at the tip of the frond, or even of the pinnae, a trait which has evidently been inherited from the walking fern. It is also said that the closely related *Aspl. pinnatifidum* is at times proliferous.

None of our other ferns has this trait, unless we except the bulbs

¹ Dr. R. T. Jackson, in a memoir too little known to botanists, has described a large number of instances of localized reversionary stages in plants and animals. This contribution to the subject of reversion is an extremely important one. Dr. Jackson recognizes the dependence of reversionary forms upon conditions of nutrition and growth. *Memoirs Boston Society of Natural History*, vol. 5, no. 4, 1899.

of *Cystopteris bulbifera*, which appear to be a special case of proliferation in which the young plants drop off at an early stage, instead of receiving sustenance from the parent until fully established. They differ also in being formed on the rachis and midribs, instead of only at the tips of the fronds or pinnae.

While cleaning the roots of a specimen of *Aspl. ebeneum*, I noticed what seemed to be a queerly shaped pinna on an otherwise bare stalk. It was soon seen that a small plant had sprung from the stalk. It was on the rachis of a sterile frond of the previous year, which had been covered with earth, and was at the point of attachment of the lowest pinna. The root was broken, but the part that remained was 8 mm. long. The first leaf, shaped somewhat like a small basal pinna, was 3.5 mm. in length. The second frond, nearly 4 mm. long including the stipe, had three lobes, the middle one being much the largest and three-notched at the end. One of the lateral lobes was slightly notched. The young plant did not seem to be in the axil of the old pinna, but exactly at the point of attachment.

I have been informed by Mr. B. D. Gilbert that this form was described about thirty years ago by Professor D. C. Eaton, who called it *Aspl. ebeneum proliferum*. It calls to mind the tropical ferns that bear buds and young plants on the upper side of the rachis, but these are produced normally, and not when the stalk is covered with earth. It may be that this is the determining cause in the case of our specimen, for it was normal in other respects. At the same time it must be admitted that this is not the only reason, for a careful search did not bring to light any more like it on other buried stalks.

It would be well worth while for some one to see whether this condition could be brought about experimentally. One might try, for instance, the effect of covering the rachis with earth at different seasons, and cover not only the perfect fronds but those that have part or all of the pinnae removed. The plant in question was growing in rather moist soil on the steep bank of a little stream.

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